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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,448	05/16/2005	Luke Ward	42965-P051US	4683

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EXAMINER	
BURKHART, ELIZABETH A	
ART UNIT	**PAPER NUMBER**
1762	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,448	WARD, LUKE	
	Examiner	Art Unit	
	Elizabeth Whitehead	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 19-31* is/are rejected.

7)☒ Claim(s) *15-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/1/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-31, drawn to a method.

Group II, claim(s) 32, drawn to an apparatus.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Groups I and II have the special technical feature of "introducing an atomized coating forming material to a pulsed excited medium to deposit a coating on a substrate" which lacks inventive step over Gitzhofer et al. ('921) in view of Heinecke et al. ('690). Gitzhofer et al. ('921) uses an apparatus to form a coating on a substrate by means of atomizing the coating forming material and introducing the atomized coating forming material into an excited medium produced by an RF generator. Gitzhofer et al. ('921) does not disclose that the excited medium is pulsed. Heinecke et al. ('690) discloses depositing a coating on a substrate by using a pulsed excited medium produced by an RF generator in order to deposit a coating onto a heat-sensitive substrate. Therefore, it would have been obvious to use the apparatus of Gitzhofer et al. ('921) wherein the excited medium is pulsed as suggested by Heinecke et al. ('690) in order to deposit a coating onto a heat-sensitive substrate.

3. During a telephone conversation with Robert Voigt on December 4, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-31. Affirmation of this election must be made by applicant in replying to this Office action. Claim 32 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

1. Claims 15-18 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. Claims 16-18 are dependent on claim 15, thus also are improper. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 8 recites the limitation "the coating forming material" in line 2. There is insufficient antecedent basis for this limitation in the claim because the previous claims only recite “atomized coating forming material”. It is unclear whether the material is being added to the coating forming material before it is atomized or if the material is added to the coating forming material after it is atomized (“atomized coating forming material”).

5. Claim 25 recites the limitation “surrounding apparatus” in line 2. There is insufficient antecedent basis for this limitation in the claim because it is unclear whether the “surrounding apparatus” is the chamber or an area surrounding the excitation medium within the chamber.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 3-7, 10, 11, 14, 25, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitzhofer et al. ('921) in view of Heinecke et al. ('690).

8. Gitzhofer et al. ('921) discloses a method for depositing a coating on a substrate (Col. 1, lines 7-10) comprising atomizing the coating forming material and activating the atomized coating forming material by a plasma discharge prior to the material being deposited on the substrate (Col. 2, lines 32-39).

9. Regarding Claim 3, an atomizer having a pump to supply the coating monomer to said atomizer is disclosed (Col. 4, lines 11-13).

10. Regarding Claims 4 and 5, the plasma discharge can be operated at atmospheric or less than atmospheric pressure (Col. 3, lines 51-52).

11. Regarding Claims 6 and 7, the coating forming material is suspended in a liquid or semi-liquid carrier substance (Col. 2, lines 27-31).

12. Regarding Claim 11, the plasma is created by radio-frequency discharge, which is a type of electromagnetic radiation (Col. 3, lines 39-47).

13. Regarding Claim 14, the substrate is located outside of the plasma discharge during coating deposition (Col. 4, lines 43-61).

14. Regarding Claim 25, Gitzhofer et al ('921) also discloses that the solvent evaporates under the extreme heat of the plasma (Col. 4, lines 52-54). The extreme heat generated by the plasma would also heat the area surrounding the plasma.

15. Regarding Claim 27, the coating forming material is a liquid mixed with insoluble particles (Col. 2, lines 27-31).

16. Gitzhofer et al. ('921) does not disclose that the plasma is pulsed.

17. Heinecke et al. ('690) discloses a method for depositing a coating on a substrate by using pulsed RF plasma techniques in order to deposit coating material onto a heat-sensitive substrate (Col. 1, lines 28-45)

18. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use the method of Gitzhofer et al. ('921) wherein the plasma is pulsed as suggested by Heinecke et al. ('690) in order to deposit coatings onto a heat-sensitive substrate.

19. Thus, claims 1, 3-7, 10, 11, 14, 27, and 30 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Gitzhofer et al. ('921) and Heinecke et al. ('690).

20. Claims 1-4, 10, 12, 13, 19-21, 24, and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodwin et al. (2004/0022945), referred to herein as Goodwin et al. ('945) in view of Badyal et al. ('950).

21. Goodwin et al. ('945) discloses a method for depositing a coating on a substrate by introducing an atomized coating forming material into an atmospheric pressure plasma discharge prior to being deposited onto a substrate ([0006]).

22. Regarding Claim 2, the plasma discharge retains the chemical properties of the atomized coating forming material ([0019]).

23. Regarding Claim 3, the atomizer is connected to a syringe pump for supplying coating forming monomer to said atomizer ([0023]).

24. Regarding Claim 12, the plasma discharge is created by any conventional means of generating a glow discharge, which is a flux of ionized particles ([0010]).

25. Regarding Claim 13, the substrate is located inside the plasma discharge during coating deposition ([0009]).

26. Regarding Claim 19, the substrate may be any material (e.g. metal, ceramic, polymer, woven or non-woven fibers, natural fibers, synthetic fibers, cellulosic material and powder) ([0017]).

27. Regarding Claim 20 and 28, the coating forming monomer material may be solid, liquid, gaseous, organic or inorganic or mixtures thereof ([0012]).

28. Regarding Claim 26, Goodwin et al ('945) discloses the same substrate material and the same coating forming material, thus the coated substrate would be subject to derivatization.

29. Regarding Claim 21, 27, and 30, the atomizer may be an ultrasonic nozzle ([0023]) wherein the coating material is a liquid or liquid/solid slurry ([0006]).

30. Regarding Claim 24, a plurality of atomizers may be used ([0011]).

31. Regarding Claim 29, since the liquid is a monomer, the precursor species must be monomeric ions.

32. Regarding Claim 31, since the coating material may be a liquid rather than a suspension of particles within a carrier liquid, the plasma discharge would contain the coating material in the absence of other materials.

33. Goodwin et al. ('945) does not disclose that the plasma discharge is pulsed.

34. Badyal et al. ('950) discloses a method of coating a surface with a polymer layer using a pulsed plasma discharge in order to achieve a greater level of structural retention (Col. 4, lines 49-56).

35. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use the method of Goodwin et al. ('945) wherein the plasma discharge is pulsed as suggested by Badyal et al. ('950) in order to achieve a greater level of structural retention.

36. Thus, claims 1-4, 10, 12, 13, 19-21, 24, 27, and 28-31 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Goodwin et al. ('945) and Badyal et al. ('950).

37. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gitzhofer et al ('921) and Heinecke et al. ('690) in view of Wang ('105).

38. Gitzhofer et al. ('921) and Heinecke et al. ('690) are relied upon as discussed in the 35 USC 103(a) rejection above. Gitzhofer et al. ('921) and Heinecke et al. ('690) do not disclose atomizing the coating forming material using a nebulizer wherein the coating forming material is in the form of a liquid or liquid/solid slurry and a carrier gas.

39. Wang ('105) discloses a method for the deposition of a coating comprising an atomized material of reactants to form said coating that is subjected to radio-frequency

radiation in a plasma region and thereafter the vaporized mixture is deposited on a substrate (Col. 2, lines 55-64), wherein the atomized material is created by the use of an ultrasonic nebulizer (Col. 2, lines 47-51) and the atomized material to form said coating is contacted with a carrier gas. (Col. 4, lines 3-5).

40. It would have been obvious to one of ordinary skill in the art at time of invention by applicant to perform the method of Gitzhofer et al. ('921) in which the plasma is pulsed as suggested by Heinecke et al. ('690), wherein the nebulizer as suggested by Wang ('105) is substituted for the ultrasonic nozzle because the carrier gas facilitates the formation of plasma and facilitates the movement of the mist from the misting chamber to the plasma region.

41. Thus, Claim 22 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Gitzhofer et al. ('921), Heinecke et al. ('690) and Wang ('105).

Double Patenting

42. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

43. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 14 of copending Application No. 10/514661. Although the conflicting claims are not identical, they are not patentably distinct from each other because although they differ in scope, the claims of 10/514661 anticipate the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

44. Claims 6-11, 14, 20-23, and 30 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5-8, 11, and 15-22 of copending Application No. 10/514661 in view of Badyal et al. ('950).

45. Application No. 10/514661 does not disclose in the aforementioned claims that the exciting medium is pulsed.

46. Badyal et al. ('950) is relied upon as discussed in the 35 USC 103 rejections above.

47. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use the claimed method of Application No. 10/514661 wherein the exciting medium is pulsed as suggested by Badyal et al. ('950) in order to achieve a greater level of structural retention.

This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Whitehead whose telephone number is (571) 272-6647. The examiner can normally be reached on Monday-Thursday, 7:00 AM-5:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

eaw

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER